

CLAIMS

1. A cancer antigen comprising a protein of any of the following (A) or (B):
(A) a protein having the amino acid sequence shown in SEQ ID NO: 1; or
(B) a protein having an amino acid sequence comprising a substitution, deletion, insertion, and/or addition of one or several amino acids with respect to the amino acid sequence shown in SEQ ID NO: 1, and also having immune-stimulating activity.
2. An immune-stimulating agent used for cancers, which comprises the cancer antigen of claim 1.
3. A peptide comprising a portion of the cancer antigen of claim 1 and having immune-stimulating activity.
4. The peptide of claim 3 which can activate cytotoxic T lymphocytes recognizing a cancer antigen protein.
5. The peptide of claim 3 or 4 which has the amino acid sequence shown in any one of SEQ ID NOS: 3 to 22.
6. A peptide, which has an amino acid sequence comprising a substitution, deletion, insertion, and/or addition of one or several amino acids with respect to the amino acid sequence shown in any one of SEQ ID NOS: 3 to 22, and has immune-stimulating activity.
7. The peptide of claim 6 which can activate cytotoxic T lymphocytes which recognize a cancer antigen protein.
8. An immune-stimulating agent used for cancers, which comprises the peptide of any of claims 3 to 7.
9. A DNA encoding the cancer antigen of claim 1.
10. A DNA of any one of the following (a), (b), and (c):
(a) DNA having the nucleotide sequence shown in SEQ ID NO: 2;
(b) DNA hybridizing with the DNA having the nucleotide sequence shown in SEQ ID NO: 2 under stringent conditions, and encoding a protein having immune-stimulating activity; and
(c) DNA having a partial sequence of the DNA of (a) or (b) above, and encoding a protein having immune-stimulating activity.

11. An antibody against the cancer antigen of claim 1 or the peptide of any of claims 3 to 7.
12. A helper T cells, cytotoxic T lymphocytes, or an immunocyte population comprising these cells, which are induced by *in vitro* stimulation using the cancer antigen of claim 1 or the peptide of any of claims 3 to 7 or a mixture thereof.
13. A helper T cells, cytotoxic T lymphocytes, or an immunocyte population comprising these cells, which are induced by *in vitro* stimulation using the cancer antigen of claim 1 or the peptide of any of claims 3 to 7 or a mixture thereof, and an immune activator.
14. The helper T cells, cytotoxic T lymphocytes or the immunocyte population comprising these cells according to claim 13, wherein the immune activator is a cell growth factor or cytokine.
15. A method for suppressing a tumor, which comprises introducing the helper T cells, cytotoxic T lymphocytes, or the immunocyte population comprising these cells of any of claims 12 to 14 into a body.
16. The method of claim 15 which is used to prevent and/or treat cancers.
17. A cell culture solution used to produce the helper T cells or cytotoxic T lymphocytes or an immunocyte population comprising these cells of any of claims 12 to 14, which comprises the cancer antigen of claim 1 or the peptide of any of claims 3 to 7, or a mixture thereof.
18. A cell culture kit for producing the helper T cells or cytotoxic T lymphocytes or an immunocyte population comprising these cells of any of claims 12 to 14, which comprises the cell culture solution of claim 17 and a cell culture vessel.
19. A cancer vaccine comprising the cancer antigen of claim 1 and/or at least one type of peptide of any of claims 3 to 7.
20. The cancer vaccine of claim 19 which further comprises an adjuvant.
21. A cancer vaccine, which comprises the DNA of claim 9 or 10 or recombinant virus or recombinant bacteria comprising said DNA.
22. The cancer vaccine of claim 21 which further comprises an adjuvant.
23. A probe for diagnosing cancers, which comprises the DNA of claim 9 or 10.

24. An agent for diagnosing cancers, which comprises the cancer diagnostic probe of claim 23 and/or the antibody of claim 11.

25. An agent for preventing and/or treating cancers, which comprises the cancer antigen of claim 1, the peptide of any of claims 3 to 7, the antibody of claim 11, and/or the helper T cells, the cytotoxic T lymphocytes or the immunocyte population comprising these cells of any of claims 12 to 14.

26. The probe or agent of any of claims 23 to 25 wherein the cancer is pancreatic cancer, colon cancer, brain tumor, malignant melanoma, chronic myelocytic leukemia, acute myelocytic leukemia, lymphoma, esophageal cancer, kidney cancer, prostatic cancer, lung cancer, breast cancer, stomach cancer, hepatic cancer, gallbladder cancer, testicular cancer, uterine cancer, ovarian cancer, thyroid cancer, bladder cancer, or sarcoma.